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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/679,801	10/06/2003	J. Nelson Wright	34114-8007US1	3732

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EXAMINER	
KISH, JAMES M	

ART UNIT	PAPER NUMBER
3737	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/679,801	WRIGHT ET AL.	
	Examiner	Art Unit	
	JAMES KISH	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _08 January 2008_.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-72_ is/are pending in the application.
  4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) _1-72_ is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
  Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
  Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  a)☐ All b)☐ Some * c)☐ None of:
    1.☐ Certified copies of the priority documents have been received.
    2.☐ Certified copies of the priority documents have been received in Application No. _____.
    3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
  * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
  Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
  Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed January 8, 2008 have been fully considered but they are not persuasive.

On page 17, the Applicant argues that Gilbert fails to teach or suggest "identifying a location associated with a set of calculated or interpolated measurements, wherein the set of calculated or interpolated measurements is derived from the sets of reference measurements." The Examiner respectfully disagrees. Merriam-Webster defines interpolate as, "to *estimate* values of (data or a function) between two unknown values." Box 23 of Figure 2 states, "Determining a set of *estimated* magnetic field measurements that would be formed by a magnetic dipole moving along the hypothesized trajectory." Therefore, these values are, according to Gilbert, made of estimates of measurements.

Regarding Applicant's arguments on the bottom of page 17, Box 26 of Figure 2 provides for iteration of boxes 23, 29, 24 and 25 until a sufficient result occurs.

On page 18, the Applicant argues that Gilbert fails to teach or disclose "receiving a set of actual measurements, each actual measurement indicative of a component of the magnetic field at each of a plurality of sensors." Regarding this argument, see Box 21 of Figure 2.

The Examiner notes that independent claims 62 and 68 (and those claims dependent from theseclaims) have been removed from the rejection relying on Gilbert due to Applicant’s arguments at the bottom of page 18 and the top of page 19 regarding augmentation and reliability weighting.

The Applicant’s argues on page 20 related to Govari's uses of subdividing bounding boxes to generate calibration measurements and not for calculating approximate dipole locations. The Examiner respectfully disagrees. The calibration measurements, which are generated by the bounding boxes, are incorporated into the estimated sensor position and orientation of 74 and the steepest descent of 76, then a new estimate is calculated in 78. If the new estimate is not in the desired range, the process repeats starting at 74. When this happens, the calibration measurements are still incorporated in the processing and are therefore used to calculate an approximate dipole location.

Regarding the Applicant’s arguments of bounding boxes and a time-constrained search, the Examiner is unable to find where this is incorporated in the claims.

On page 21, the Applicant argues that the reference measurements of Govari are calculated and that the calibration measurements are merely supplemental. See the rebuttal above regarding arguments on page 20.

The Examiner notes that independent claims 62 and 68 (and those claims dependent from these claims) have been removed from the rejection relying on Govari due to Applicant’s arguments at the top of page 22 regarding a combination of a trilinear and a second order difference interpolation.

On page 23, the Applicant argues that no motivation has been suggested from the art of one of ordinary skill in the art. The Examiner provided motivation in the previous Office Action. Specifically, it would have been obvious to combine based on the premise that Govari's methods would increase the speed of the localization process, thereby reducing examination time. Govari discusses PCT patent application publication WO 94/04938, which is incorporated by reference into Govari's disclosure, in that this reference provides for significant increased operating speed of the position system and also that there are disadvantages (column 1, lines 33-51). Govari provides a system and method that makes up for these disadvantages and this process would also increase the operating speed of Gilbert.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 11-16, 21, 42-45, 48-53, 56-59 and 61 are rejected under 35 U.S.C. 102(b) as being anticipated by Gilbert (US Patent No. 5,731,996). Gilbert discloses a processing method and apparatus for dipole moment detection and localization. A set of actual magnetic field measurements of a magnetic dipole is collected using a plurality of sensors, then a location for the dipole is hypothesized. A set of estimated magnetic field measurements is determined that would formed by a dipole at the hypothesized location. The actual field measurements are compared with the estimated field measurements. This is repeated for different hypothesized locations. See column 2, lines 55-65 and column 4, lines 5-25, as well as Figure 2. The filtering steps 28 and 29 can account for reliability issues as well as interference within the area to be measured. This processing method and apparatus may be used with any system intended to passively detect, locate and classify objects using their magnetic fields (column 3, lines 19-21). However, for intensive purposes and in light of the examples for use of the system and method (i.e. personal weaponry detection systems), the marker as claimed can be interpreted as a firearm that is holstered, or affixed, to a person's side. See Equation [13] at column 5 and Equation [18] at column 6 for the objective function and spatial offset, respectively.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-12, 14-20, 42-51, 53-56 and 58-60 are rejected under 35 U.S.C. 102(e) as being anticipated by Govari (US Patent No. 6,484,118). Govari discloses a system for determining the position of a medical device having a sensor comprising a plurality of radiator elements. The method comprises a calibration step involving defining a mapping volume within a generated magnetic field. A sensor is moved according to the vertices of a cube and the entire mapping volume comprises a plurality of cubes (column 3, line 48 through column 5, line 6). Also see column 18, line 5 through column 20, line 43 for descriptive analysis of the calibration steps, as well as Figure 3. More specifically, see column 19, lines 17-30. For sub-dividing, see column 20, lines 33-36. The system also calculates predicted magnetic fields at estimated positions and orientations (column 9, lines 42-54). See column 13, lines 25-38 for discussion on reliability weights. A least squares of a Jacobian are utilized within the methods of the system (column 14, lines 27-60). See column 21 through column 24 for discussion of sensing while an object produces interference within the mapping volume. The method repeats until an error limit substantially reaches zero.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gilbert in view of Govari, further in view of any of Montean (US Patent No. 4,745,401), Fabian (US Patent No. 5,057,095) and/or Mate et al. (US Patent App. No. 2002/0193685). Gilbert discloses a processing method and apparatus for dipole moment detection and localization. A set of actual magnetic field measurements of a magnetic dipole is collected using a plurality of sensors, then a location for the dipole is hypothesized. A set of estimated magnetic field measurements is determined that would formed by a dipole at the hypothesized location. The actual field measurements are compared with the estimated field measurements. This is repeated for different hypothesized locations. See column 2, lines 55-65 and column 4, lines 5-25, as well as Figure 2. However, this process iterates through all locations within a measurement area. Govari teaches a system for determining the position of a medical device having a sensor comprising a plurality of radiator elements. The method comprises a calibration step involving defining a mapping volume within a generated magnetic field. A sensor is moved according to the vertices of a cube and the entire mapping volume comprises a plurality of cubes (column 3, line 48 through column 5, line 6). Also see column 18, line 5 through column 20, line 43 for descriptive analysis of the calibration steps, as well as Figure 3. More specifically, see column 19, lines 17-30. For sub-dividing the mapping volume, see column 20, lines 33-36. See column 13, lines 25-38 for discussion on reliability weights. See column 21 through column 24 for discussion of sensing while an object produces interference within the mapping volume. The method repeats until an error limit substantially reaches zero. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the calibration method taught by Govari with the method and apparatus of Gilbert in order to reduce examination time.

Gilbert suggests that the processing method and apparatus may be used with any system intended to passively detect, locate and classify objects using their magnetic fields (column 3, lines 19-21). While not explicitly stating that a resonating magnetic circuit is incorporated into the object to be sensed, it is well known in the magnetic localization art to use such a marker. In Montean, see column 5, lines 15-27. In Fabian, see column 4, lines 35-39. In Mate, see paragraphs 36-38.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES KISH whose telephone number is (571)272-5554. The examiner can normally be reached on 8:30 - 5:00 ~ Mon. - Fri..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Brian L Casler/
Supervisory Patent Examiner, Art
Unit 3737

JMK